

Extra Credit (5 points available)

Instructions:

Be verbose. Explain clearly your reasoning, methods, and results in your written work. Write clear code that is well documented. With 99% certainty, you cannot write too many code comments.

5 points of Extra Credit are available for this assignment.

1. When finished, respond to the questions in Canvas as “done.” We will record your grade there.
2. In your code repository, create a folder called “Week06.”
3. In that folder, include
 1. a document (preferably a PDF) with your responses.
 2. All code
 3. A README file with instructions for us to run your code

Everything must be checked into your repository by **8am Saturday 11/30**. A pull will be done at that time. Documents and code checked in after the instructors pull will not be graded.

This assignment is optional. If you do not attempt it, you will not be penalized.

Problem:

You have run a simulation of asset returns. These returns are available in data.csv.

You are to construct a portfolio of these 3 assets. You are allowed to short, but no short can be less than 100% of the portfolio notional weight.

The current risk free rate is 4.75%

1. Find the maxim Sharpe Ratio portfolio.
2. Construct a new risk adjusted return metric that is

$$RR_p = \frac{E(r_p) - RF}{ES(r_p - RF; \alpha = 2.5\%)}$$

Where RR_p is the Risk Adjusted Return of the portfolio, r_p is the portfolio return, and $ES()$ is the Expected Shortfall at the given Alpha level.

3. Explain the differences between the portfolios. Use graphs and tables to back up your explanation.